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April 4, 1959

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



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Self Page 214

A SCIENCE SERVICE PUBLICATION

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An eminent inventor in Italy discovered the secret of the fool-proof, non-electric, spinning-wheel adding mechanism inside this machine. He had been trying for years to develop a real adding machine at a price for everyone... even in war-torn Europe. NOT another flat pocket adder that requires you to read long instructions before you can begin to operate it. Instead, he wanted a real, desk type adding machine... that anyone could operate, even a child... that would be automatic, fool proof... and, above all, within the pocket-book of everyone! He found the answer after studying the spinning wheels inside electric computing machines. He came upon a way to let a person's hand supply the "power" to the wheels... instead of electricity! Just imagine! He invented an adding machine designed so that the gentlest touch makes the wheels inside turn! After one complete turn... the first

wheel automatically trips the next wheel... just like \$200.00 electric machines! Nothing to remember. Nothing to do but press down the numbers to be added. Everything else automatic! When the Italians... famous for smaller automobiles and smaller motorcycles... started manufacturing this revolutionary new smaller, non-electric adding machine, offices and individuals in Rome, Venice, Florence tried it. WHAT ACCLAIM IT MET WITH! Everywhere it added the longest columns of figures within seconds of the speed of electric machines. Giant companies gave it to secretaries... officers, salesmen. Efficiency of entire companies improved. Mistakes were cut down.

And from individuals came even more glowing stories. Instantly adding became a pleasure instead of an aggravating chore. Households became better managed. Budgets stuck to the bill checked... mountains of figures added in no time... mistakes a thing of the past! And when this remarkable adding machine was imported to this country, the acclaim was just as great! For here at last was what every home... every office... every store has been waiting for. The perfect, small, easy to use, automatic, desk model adding machine... in beautiful silver tone and blue finish, with big, easy to read numbers... and at a price so incredibly low that not a family or store or office can afford to be without it!

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This original ADDIPRESTO is precision-made from the finest quality materials, and will give you a lifetime of accurate, effective performance. Unconditionally guaranteed against defects in material or workmanship.

PROVEN IN USE

Don't confuse this desk-model real adding machine with flat pocket adders. ADDIPRESTO is used by offices, stores, institutions for adding jobs that demand true speed and accuracy. Used by giant corporations. Saves time, saves mental work, saves money. A real adding machine.



FOR THE FIRST TIME —Your Own Personal Desk Model Automatic Adding Machine!

Now you can keep ADDIPRESTO on your desk at home or office and never add anything in your head again. In SECONDS... perform almost any adding chore. No more costly mistakes. ADDIPRESTO's spinning wheels and computer type mechanism do the "figuring" automatically!

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MAIL COUPON NOW!

ELECTRONICS

U. S. Contacts Venus

Radio waves emitted from a Massachusetts Institute of Technology transmitter have reached Venus and returned, marking the first radar observations of any planet.

► RADIO SIGNALS have reached Venus twice, Massachusetts Institute of Technology radar experts reported.

Astronomers and electronic engineers throughout the world have eagerly awaited radar observations of a planet ever since the moon was detected by radar in 1946. The M.I.T. Lincoln Laboratory team, which has won the international race to bounce a signal off another planet, did so more than a year ago while Venus was about 28,000,000 miles from the earth, more than 100 times the distance to the moon.

The American experimenters used a powerful radar research installation on Millstone Hill, in Westford, Mass., and credit their success not only to its power but also to the use of a new kind of amplifier and to sophisticated new mathematical and electronic computing techniques.

The radio waves emitted from the trans-

mitter took about five minutes to make the 56,000,000-mile round trip to Venus and back. Making certain that the signals received on earth were indisputably those which had been sent from earth took months. They were recorded on magnetic tape and examined in a high-speed electronic digital computer. Its calculations now have shown that there is less than one chance in 10,000,000 that the experimenters were deceived by nature's quirks and noises.

Venus first was contacted on Feb. 10, 1958. Two days later, the feat was repeated. Venus then was receding from the earth.

The signals sent on Feb. 12 did not return until nearly 7.5 seconds later than those that were sent on Feb. 10. The difference in the time required for the radio waves, traveling at the speed of light, to make the round trip indicated that in the

two-day interval, Venus and the earth had moved 696,640 miles farther apart.

A report of the work in *Science* (March 20) points out radar now can be used to measure interplanetary distances with greater precision than was previously possible. The M.I.T. scientists' findings indicate the astronomical unit, the mean radius of the earth's orbit around the sun, commonly used to compute distances within the solar system, may be slightly shorter than was thought.

The radar used was developed for the U. S. Air Force, primarily for the study of problems in ballistic missile defense. The new amplifier used with it was a solid-state maser, a device which introduces very little noise. The increase in sensitivity which the maser gave the apparatus was equivalent to a four-fold increase in the power of the transmitter. The researchers pioneered in using this device, which has since been used elsewhere to extend the range of radio telescopes.

Despite the high power of the transmitter, and the added sensitivity achieved with the maser, the signals returned from Venus were so weak that new techniques were required to detect them with certainty. Recordings of what was received were searched by the electronic computer for the particular train of pulses that had been transmitted.

The Lincoln Laboratory team was led by Drs. Robert Price and Paul E. Green Jr., and included Thomas J. Goblick Jr., Robert H. Kingston Jr., Leon G. Kraft Jr., Gordon H. Pettengill, Roland Silver and William Boyd Smith.

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ENGINEERING

Spot-Pinpointing Device Aids Missile Guidance

► A DEVICE that can readily determine the position of any point on earth to within ten feet by astronomical means is expected to give more accurate guidance of long-range missiles.

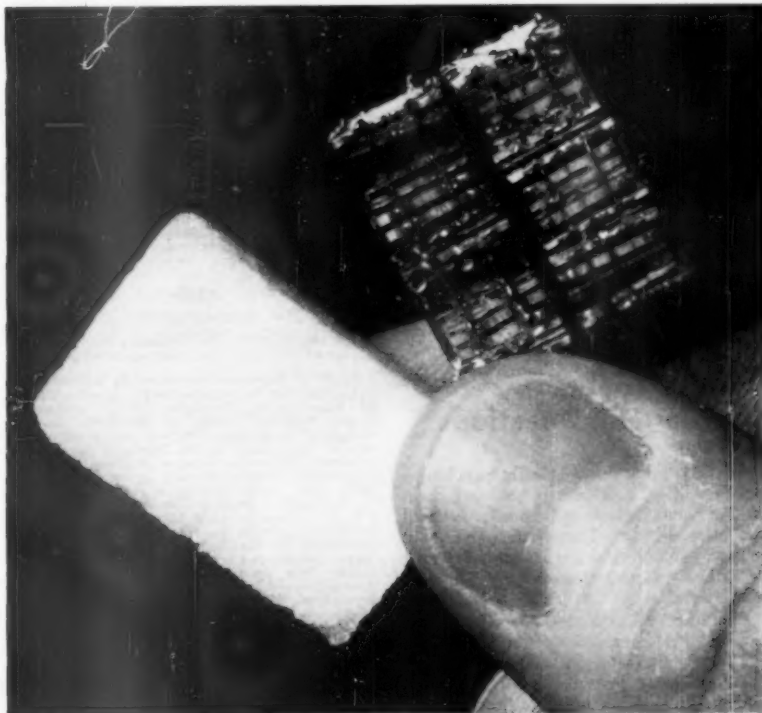
Described at the Institute of Radio Engineers meeting in New York by F. J. Alterman of General Mills, Inc., the device consists of a computer and an optical star-observing instrument.

The computer trains the star gazer in the anticipated direction of a known star. When the earth's rotation causes the star to enter the field of vision of the star gazer, a photoelectric device signals the computer, which then notes the exact time by means of an electronic clock, and checks the position of the star gazer with the help of a gyro compass.

After a suitable number of stars have been similarly observed, the computer determines the location of the observation site to within one-tenth of a second of arc, or about ten feet.

Guidance accuracy will be increased by reducing uncertainties as to the precise locations of the missile launching site and points along its flight path.

Science News Letter, April 4, 1959



CUBE-SIZED RADIO—Micro-modules, circuit building blocks measuring only a third of an inch on each side, have gone into the development of devices such as this sugar-cube-sized radio by the U. S. Army. Tests by the Army Signal Corps and the Radio Corporation of America indicate the tiny cubes are highly dependable, long-lived and extremely rugged.

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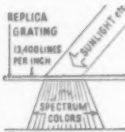
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GEOPHYSICS

U. S. Will Continue Research in Antarctica

► THE UNITED STATES will continue its research program in Antarctica under the auspices of the National Science Foundation.

Chief scientist for the program will be Albert P. Crary, a noted polar geophysicist who recently returned from two and a half years in the Antarctic. Recommendations concerning the desirability of proposed polar programs are made to the Foundation by the Committee on Polar Research of the National Academy of Sciences-National Research Council.

Mr. Crary will advise the Foundation in planning the scientific programs, selecting personnel and equipment, and will supervise the conduct of field investigations, data analysis and publication. He will also continue his affiliation with the Air Force Cambridge Research Center.

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PHYSICS

National Atmospheric Institute Proposed to NSF

► A PROPOSAL that a national institute be established to do basic research in the atmospheric sciences has been submitted to the National Science Foundation. The proposal is contained in a report drawn up by the University Committee for Atmospheric Research, UCAR.

The UCAR report recommends the establishment during a six-year period of an institute costing an estimated \$33,253,000 for capital expenditures during the first six years. Facilities would include mathematical, chemical and physical laboratories, flight facility with appropriate aircraft, radiation probing facility with adequate radar equipment, computer facility, library, and machine shops. It is proposed that the institute be operated by a group of universities and supported by the National Science Foundation.

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PSYCHOLOGY

Science Taught by Training in Questions

► SCIENCE is being taught to fourth grade children in Illinois by training them to ask good questions. Dr. J. Richard Suchman of the University of Illinois, Champaign, told the Society for Research in Child Development meeting in Bethesda, Md.

First the children are shown a motion picture of a science demonstration. Then the child tells the teacher what he saw in the film. Next the child asks questions to find an explanation for what he has seen. He is limited to questions that can be answered by "yes" or "no" and thus he must formulate hypotheses.

Later a tape recording of the questions is played back and the teacher praises good questions and criticizes bad ones.

Children like to play with blocks—

children of all ages from three to ten and of all grades of intelligence from just normal to genius. But there is a big difference between the different kinds of structure they build. Dr. Eleanor L. Robinson of the University of Minnesota told the meeting.

Younger children make simple structures—piles and strings of blocks. As the children grow older they tend to require more time, use more blocks and increase the size of the structures. The seven- and ten-year-olds are more likely to construct a roofed building and enclosure. Boys spend more time and make taller constructions than do girls. The older children frequently build public buildings, adding vivid geographical and historical details.

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PHYSICS

Measure Baseball Curve

Low-speed ballistics has come to the aid of the baseball pitcher with calculations of the important factors that go into an effective curve ball, spin and speed.

► **BASEBALL** pitchers take note. Spin means a lot more to an effective curve ball than speed. And with the right combination of spin and speed, the maximum curve you can expect to throw is about 17 inches.

These are the scientific findings of a former director of the National Bureau of Standards and a life-long baseball fan, Dr. Lyman J. Briggs.

In setting out to determine the relationship of spin to deflection at different speeds, a problem that also has application to low-speed ballistics, Dr. Briggs enlisted the services of Cookie Lavagetto, manager of the Washington Senators, and some members of his pitching staff. For more precise calculations he used the NBS wind tunnel.

At Griffith Stadium he fastened light, flat tape to a baseball and laid it loosely on the ground, free from twist, between the pitcher's mound and home plate. After the ball had been thrown and caught, the number of complete turns in the twisted tape indicated the number of times the ball had spun during the 60-foot route. The number of spins ranged from seven to 16.

Assuming that the speed of the pitch was 100 feet per second—the most effective speed for a curve ball and well within a professional pitcher's capability—the maximum spin was 1,600 revolutions per minute.

As a result of many measurements in the wind tunnel, Dr. Briggs found that for spins up to 1,800 rpm and wind speeds up to 150 feet per second (equivalent to the speed of the pitched ball) the lateral deflection, or curve, of the ball was directly proportional to the spin and to the square of the speed.

Curves of 11.7 inches at 1,200 rpm and 17.5 inches at 1,800 rpm were found to be the maximum curvatures attainable for a pitched ball traveling at 100 feet per second. Any increase in speed for these rates of spin resulted in lesser curvatures.

These findings apply to balls spinning about a vertical axis. Usually the spin axis of a pitched ball is inclined from the vertical, which makes the curvature less. If the spin were horizontal, there would be no sidewise deflection.

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GEOPHYSICS

World Magnetism Charted

► **AN ELECTRONIC** computer at the Coast and Geodetic Survey will soon be given the job of digesting 150,000 geodetic observations to be used in making of one world map—the 1960 magnetic chart.

This chart is published every five years and is used by navigators to determine the variation of their compass needles from true north.

Without the computer, the job would be almost impossible. It might take one man 100 years to do. With the computer, the calculations will be made in about four weeks.

Robert W. Miller, of the Survey's computer office, said the present computer will do the job far faster than those used in 1950 and 1955. The same calculations that will take 125 machine hours this year took approximately 800 machine hours in 1950 when the computers used had a much more limited storage capacity, he said.

The 150,000 observations have been made from all parts of the world over the past 60 years. Most of them have been made on land, but some were made by ships at sea or planes in the air.

All available figures for any point will be used. The latest reading for any particular point may have been made at any time between 1900 and 1958.

The geodetic observations are punched in cards, printed on large sheets by country

or area and then reduced by the computer to the date of the chart, in this case 1960.

Reduction calculations include multiplying annual changes by the number of years that have elapsed since the observation was made. Eventually, the machine groups the figures for each one-degree quadrangle of the earth's surface, or 60 nautical miles square at the equator.

Then the chart makers draw lines showing how much the compass will vary from true north in 1960, as well as lines indicating the annual rate of change. Since the charts are only published every five years, the Survey must issue data on yearly deviations so that navigators can make adjustments on the magnetic chart.

Yearly shifts in the magnetic field of the earth, said Mr. Miller, are fairly constant, with the exception of "outstanding disturbances" in the field that occur roughly every four to seven years. There have been about 15 such disturbances since 1911, he said.

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GEOPHYSICS

Soviets Find Evidence Of Under-Ice Continent

► **RUSSIAN** scientists have found the first positive evidence that the Antarctic contains a large solid land mass of continental proportions.

Their work was reported by Morton J. Rubin, a U. S. Weather Bureau meteorologist, on his return from a 15-month tour as a liaison scientist at the Soviet International Geophysical Year station at Mirny on the east coast of Antarctica.

Previously, it had only been speculated that there was a great land area under the thousands of feet of ice cap. U. S. scientists had found that the western part of Antarctica consisted of a series of islands.

A Russian team traversed about 1,400 miles of the eastern section from Mirny to the Pole of Inaccessibility (the latter an area particularly hard to reach over the surface), taking seismic soundings every 30 to 50 miles.

To make the soundings, they drilled about 200 feet into the snow and ice, exploded charges at the depth and recorded the echoes off the earth below.

They found that the land began about 200 miles in from the edge of the ice cap. Land levels varied from sea level to about 10,000 feet above. At the 10,000-foot level, which happened to be at the Pole of Inaccessibility, the ice cover was 3,000 feet thick. The ice was as much as 14,000 feet thick in other areas.

Mr. Rubin found the 145 Soviets at the Mirny station friendly and cooperative. He said this was the case among the scientists of all the nations in the Antarctic. A Russian meteorologist was assigned to the U. S. Little America station in exchange for Mr. Rubin.

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SPACE WEB—An 18-foot parabolic antenna at General Electric Company's space vehicle tracking station, Schenectady, N. Y., was used to pick up signals from Pioneer IV more than 410,000 miles from earth. Signals were fed into a low-noise parametric amplifier where they were amplified and converted for use by a conventional receiver. Engineer Allen D. French, who is in charge of the space project, examines the antenna.

MEDICINE

Robots May Help Doctors

Automation is beginning to play an important role in medicine, including the fields of preventive medicine, instrumentation and hospital care.

► AUTOMATION'S role in the hospital of the future can be a big one, but we will still need the doctor, Dr. Louis Orr, president-elect of the American Medical Association, said.

Our rapidly expanding population will require either more care from more doctors or some means by which people can maintain health and, therefore, need less medical care, he told a symposium at the Atomomic Research Center, Montgomery, Ala.

Automation linked with preventive medicine appears to be the answer, he said. Doctors should look into the possible medical application of the automation age, he added.

For instance, the digital computer can store and interpret medical knowledge accumulated within the past 50 years. Medical science has accumulated a tremendous amount and complexity of published data. Most of this is doomed to wind up on some dusty library shelf unless a method more rapid than human skill can make it available for quick reference, he pointed out.

Centralized electronic file could store existing knowledge on disease symptoms and treatment. Thus a doctor could "feed" the symptoms into a computer and await an answer advising treatment.

Regardless of the powers of automatic machines, however, doctors would be a necessary part of the automation picture. Some patients and some diseases just do not respond to impersonal treatment either from a doctor or a machine.

This human need for personal contact is what makes the practice of medicine an art as well as a science, he said.

Dr. Orr expressed the belief, however, that automation can supplement the doctor's memory and facilitate his access to the wide knowledge available to him. Likewise automation can lower the "hotel" aspects of hospital bills.

For instance, the nursing profession is usually responsible for many bookkeeping functions in the hospital. Automation can solve this problem. Even new methods of laundering could cut expenses that are now pushing hospital rates ever skyward.

Other foreseeable cost-cutting advances for hospitals of tomorrow include disposable sheets, towels, gloves, masks and other linens.

Doctor's Black Bag

► MEDICINE as we know it today is primitive in some respects.

The instruments in the doctor's little black bag today are the same instruments that were carried there 25 and 50 years ago, said Dr. John H. Heller, director of the

New England Institute for Medical Research, Ridgefield, Conn.

Our scientific technology has improved vastly, yet few of the newer tools have been incorporated into the practice of medicine, he asserts. Doctors still pinch and punch patients to determine hollowness of the chest.

Instruments are available today, or can readily be made, that would streamline the medical tool box and remove much of the guess work that is now necessary.

Dr. Heller said most medical advances have occurred through "fortuitous happenstance." Even today one of the world's oldest and most commonly used drugs, aspirin, is still little understood by scientists. No one knows just what aspirin does to the body, yet the beneficial aspects of this substance are common knowledge.

"Imagine what could be accomplished if we knew what we were doing," Dr. Heller said at a recent meeting of the second annual conceptual symposium of the Atomomic Research Center.

There are two methods by which men can gain medical information. One consists of simply stumbling upon something, such as tranquilizers, which were originally designed for the purpose of relaxing muscles. It was accidentally observed that the drugs also had tranquilizing effects upon the patient. Today scientists do not yet understand just why tranquilizers tranquilize, Dr. Heller stressed.

The other method of obtaining medical information is, of course, to look for it, he continued. This consists of more basic research into the why's and wherefore's of the human body's components, living cells and molecules.

Dr. Heller expressed the belief that only when man understands the molecular structure of the body cells and the particular role each molecule plays will doctors be able to begin to understand such diseases as arthritis, cancer, heart disease and others, and thus be able to prevent them from occurring.

Hospital Kitchen Costs

► THE MENU that may be served to future space crews of this country may also be served to the ordinary citizen when he is hospitalized. One of the expensive items in hospitals of today is the kitchen.

The experimentation going on in reconstituting foods for men in space flight vehicles may produce nourishing and palatable diets for hospital patients, Orton P. South, technical adviser to the board of directors, Atomomic Research Center, suggested.

Hospitals can benefit tremendously from

this development if these foods can be produced in factories specifically designed for the purpose, he said at the second annual conceptual symposium of the Atomomic Research Center.

Present work in the field of irradiated, and therefore preserved, foods, suggests that it might be possible to eliminate completely the kitchen function in the hospital of the future. Meals could be centrally stored or placed in individual rooms and prepared when the need arises.

Commenting further on the continuing rise in the cost of hospital maintenance and care, Mr. South cited these atomic age improvements that could be utilized by hospitals: computers to store the history of each patient including pulse rate, heart beat and information about X-rays and other pictures; the physiological transducer which offers to doctors the chance to measure some of the vital functions of the body, much as some of the vital functions of a missile are now measured.

With combinations of these machines doctors will be able to pull together simultaneously all of the functions of the body for one particular period of examination.

One of the more fortunate aspects of establishing a hospital that could employ all of these modern technologies is the fact that each individual device is already a reality. Nothing has to be invented before plans such as these can be begun, Mr. South pointed out. Instead, more intensive use in some cases, or a completely new application in others, is required.

Science News Letter, April 4, 1959

AGRICULTURE

Corn Cob Makes Garden Mulch

See Front Cover

► AN ALL-ORGANIC garden mulch has been developed using corn cobs.

The heart ring of hybrid corn cob is the new material for the garden mulching product developed by Cargill, Incorporated. In the photograph on the cover of this week's SCIENCE NEWS LETTER, the firm and highly absorbent heart ring can be seen encircling the pithy core. Surrounding the heart ring are the "beeswings," sockets of filament that grip the kernels.

In production the cob is ground, the heart-portion separated and its particles reduced to granule size. Controlled processing sterilizes the granules under 200 degrees of dry heat and prevents weed seed germination. The material is then sprayed with an organic additive to help prevent nitrogen deficiency and to aid bacterial action.

The material is described as being useful for surface mulching and, when spaded under, for soil conditioning for growing flowers, lawns, shrubs, fruits and vegetables. When used as a surface covering, one cubic foot of the mulch is said to immediately absorb and store 4.4 gallons of moisture. In contrast, peat moss absorbs water slowly and when saturated holds 3.4 gallons. Rough-crushed cobs, another mulch can hold even less, only 3.2 gallons.

Science News Letter, April 4, 1959

METEOROLOGY

Compute Hurricane Arrival

An objective method that will enable meteorologists to warn a locality a hurricane is imminent may help in deciding whether or not precautionary measures are needed.

► A NEW METHOD has been developed for deciding when a hurricane will be close enough to any locality to threaten the area with sufficient damage to warrant issuing a hurricane warning.

Dr. Thomas F. Malone of The Travelers Insurance Companies, Hartford, Conn., said the method could be used to calculate objectively on an electronic computer the probability that a hurricane will come within any specified distance of a particular locality.

Knowing this, he told the American Meteorological Society meeting in Chicago, weathermen could then decide whether to issue a hurricane warning based on the cost of precautionary measures and the loss that would be incurred if such measures were not taken.

Pin-point precision in the prediction of a hurricane's position 24 hours in the future is not likely to be achieved in the immediate future, Dr. Malone said. The weatherman is therefore faced with deciding when a hurricane constitutes a threat to a certain area. It would be too expensive to take precautionary measures every time a hurricane threatened, so the cost of repeatedly taking such steps must be weighed against the damage that might result if the tropical storm should strike.

Dr. Malone's method is based on a study of the movements of 447 hurricanes in the North Atlantic Ocean and Gulf of Mexico during the period from 1928 to 1953. His

final result is a series of ellipses showing the probability that the hurricane will fall within the area enclosed by that ellipse, either within 24 hours, or at any time during its lifetime.

Using this probability figure, Dr. Malone reported, the decision on issuing a hurricane warning could be made according to a simple mathematical formula. As an example, he said, if the cost of precautionary measures is \$5,000 and the possible loss is \$25,000, the measures should be taken when the probability that a hurricane will come close enough to cause a loss is one-fifth, or 20%.

Finding River's Flow

► A NEW WAY of finding the highest flows to be expected in rivers and streams has been devised by two University of Chicago meteorologists.

Of great importance in building dams and planning for the multiple use of watershed areas anywhere in the world, the method was reported to the Meteorological Society meeting by Dr. Horace R. Byers. Dr. Byers said he and Dr. Herbert Riehl had found that modern meteorological methods could replace previous ways of determining maximum river and stream discharges.

The only information needed is the value

of wind speed and direction up to 10,000 feet above the earth's surface for the watershed area being studied. From this Drs. Byers and Riehl can construct a model of the average storm, and then of the worst possible storm to be expected.

Using the model, they can estimate how much precipitation falls during the passage of an average storm, and also of the most intense storm.

The values of flood flows thus obtained can be compared with stream flow characteristics of the region under consideration.

This method makes the collection of water run-off data and other factors for a period of many years, sometimes as many as 50, unnecessary. It can be used for any area in the world where the wind pattern is known. This includes most countries, except for many in South America.

The question of what maximum flood stages to provide for has been a problem ever since man started to build dams and other structures along rivers. The United States, perhaps exceeded only by China in the magnitude of flood problems on its great rivers, has been concerned with the so-called "maximum design flood" for many years, Dr. Byers said.

He said the method holds special promise for estimating precipitation over large basins. It does not, however, apply to thunderstorm-type rains, which are critical over small basins, because the weather features involved occur on too small a scale.

Science News Letter, April 4, 1959

PSYCHOLOGY

Tranquilizers Cause Inaccurate Reactions

► TRANQUILIZERS cause a trained monkey to respond less accurately.

Experiments so far show clearly that a monkey's performance of learned responses and cues becomes lessened after administration of chlorpromazine, a tranquilizer, Dr. Robert Berryman, a psychologist at Columbia University, said.

A monkey learns to estimate his own response, Dr. Fred S. Keller, professor of psychology at Columbia, explained. For instance, he will learn to hit a bar enough times to receive an award of food. This is comparable to counting.

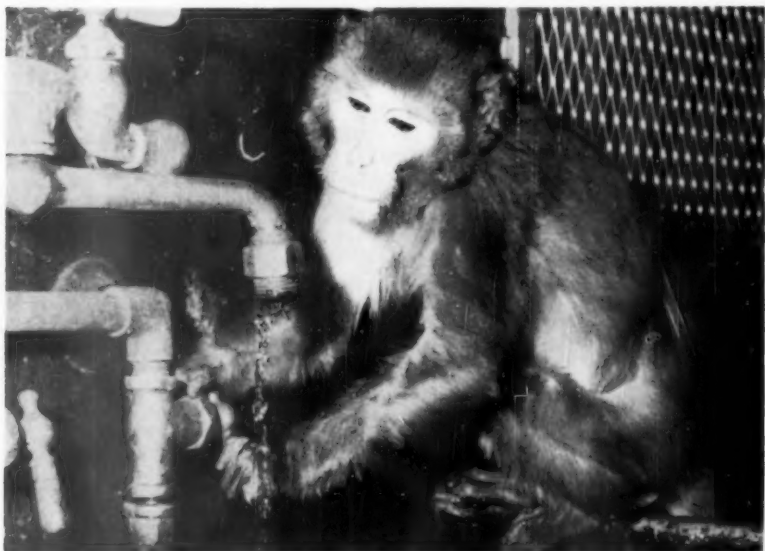
When the same monkey is tranquilized, however, he will overshoot or undershoot the correct number of taps on the bar.

In other words, while free of the drug, the monkey is able to determine and react to a certain number of taps on a bar which are followed by a reward. Under the effects of a tranquilizer, the monkey's ability to sense his own behavior is altered, the psychologists said.

"The effect of drugs upon an organism's discrimination of its own behavior, or the sensory feed-back from this behavior, is a major problem," they emphasized. The effects of tranquilizers upon the ability of automobile drivers has not yet been determined.

Working with the two psychologists is William Wagman, research assistant.

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TRANQUIL MONKEY—Cookie, Columbia University research animal, takes time off from work for a refreshing drink. Cookie, together with pigeons and white rats, is "employed" by the department of psychology for experiments in studying the effects of tranquilizing drugs on organisms.

MEDICINE

UCLA Doctors Report Measles Vaccine Possible

► THE POSSIBILITY of an effective vaccine for regular measles has been reported by investigators at the University of California, Los Angeles, Medical School.

Drs. John M. Adams, David T. Imagawa, Stanley W. Wright and George Tarjan announced the results of a vaccine made from live distemper virus cultivated in chicken eggs.

Two hundred individuals at a state hospital were inoculated with the vaccine. For comparison, a control group of 200 received flu shots, another group of 200 were given mumps vaccine, and 1,400 who were not vaccinated served as a third control group.

Almost three years later an epidemic of measles occurred in the hospital afflicting more than ten percent of the patient population. More than three times as many cases occurred in the unvaccinated or control groups as occurred in the vaccinated patients.

The significance of this result is not yet established, the scientists cautiously stated. However, the results appear promising in light of the fact that the first test of immunity occurred almost three years following but a single inoculation of the vaccine. The odds of this threefold reduction happening by chance are 25 to one, they noted. A series of shots and perhaps periodic booster shots might afford better protection.

Dr. Adams emphasized the need for effective measles immunization. He pointed out that while measles is generally thought of as a not too serious childhood disease, it is in fact a serious problem.

"Last year there were more than twice as many deaths resulting from measles as from polio," he said. "Measles encephalitis is not common, but about 50% of all victims of this complication suffer permanent brain damage."

Science News Letter, April 4, 1959

MEDICINE

Uterine Cancer Deaths Cut in Half

► THE NUMBER of deaths caused by cancer of the uterus has been cut virtually in half within the past ten years, a radiologist has reported.

Within the past 30 years the percentage of women surviving cancer of the neck of the womb for five years or more has risen about threefold, Dr. Howard B. Hunt, professor of radiology at the University of Nebraska College of Medicine, said.

Dr. Hunt said the Nebraska death rate from cancer of the uterus has fallen from 11.5 per 100,000 population in 1944-48 to 6.6 during 1954-57. Although his statistics represented morbidity and mortality rates for that state alone, they are presumed to be generally representative of most of the United States.

He explained this marked improvement was due to earlier diagnosis, surgical re-

moval or X-ray destruction of pre-cancerous lesions, making it impossible for the disease to develop, and better treatment.

Bleeding between periods or after the change of life, or development of vaginal discharge signals the need for a careful pelvic examination, Dr. Hunt emphasized. He spoke to a group attending the Seventh Annual Cancer Seminar in Phoenix, Ariz., sponsored by the Arizona Division of the American Cancer Society.

Pre-malignant changes and in situ cancers in their earliest stage are being detected by routine pelvic examination and smear studies, particularly in those women past 35 who have borne children, he added.

Overall, the improvement in survival is the result of more women reporting to their doctor with curable lesions and improved methods of treatment, both radiological and surgical, he concluded.

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MEDICINE

"Neglected" Type of Fats Cause in Heart Disease

► A COMMON type of fat that has long been neglected is suspected as a possible cause of coronary artery disease.

The common fat is one of the so-called neutral fats or triglycerides. These are the chief constituents of common fats in food and in the body's fat tissue.

Studies to date indicate some error in the manner by which the body manages this fat may be the most important abnormality in coronary artery disease, more so than the way the body handles the better known type of fatty material called cholesterol.

Dr. Margaret J. Albrink, Yale University Medical School, is studying 100 patients. If her initial findings are borne out by further study, abnormal triglyceride levels in the blood might serve as an indication that a person will later have problems with atherosclerosis, thickening of the arteries that underlies most heart attacks.

In addition, if Dr. Albrink is correct in suspecting the common fat, the usefulness of low fat diets in the treatment of atherosclerosis would become doubtful.

The study of the influence of triglycerides on heart disease has been neglected because methods to determine their presence in the blood are cumbersome, difficult and often inaccurate.

However, some of these obstacles have been overcome by a new measuring method developed by Dr. Albrink.

In a recent interview, she said that determination of triglycerides in a person's blood may be more significant than the determination of cholesterol. An abnormal level of cholesterol in the blood is used by many doctors as an index of suspicion in atherosclerosis although many others feel this is unjustifiable.

In one study, reported on earlier, Dr. Albrink found that most of 82 men who had suffered a heart attack had normal cholesterol levels in the blood. However, two-thirds had abnormal levels of triglycerides.

Science News Letter, April 4, 1959

IN SCIENCE

GENERAL SCIENCE

Closed-Circuit Television Links Medical Schools

► COURSES ARE being given simultaneously at five medical schools over closed-circuit television.

This first in medical education will allow 1,300 students to share the knowledge of leading specialists without leaving their own school auditoriums. It will save valuable time for specialists who otherwise would have to repeat their lectures at each of the five schools.

The color telecasts are being received on screens as large as four and one-fourth feet by six feet. A telephone hook-up lets students relay questions directly to the lecturer through a moderator at each school.

The schools, all in Philadelphia, are the University of Pennsylvania School of Medicine, Jefferson Medical College, Temple University School of Medicine, Hahnemann Medical College and Woman's Medical College of Pennsylvania.

The first series of lectures is being given by Dr. Joseph W. Spelman, medical examiner for the city of Philadelphia. The programs will be produced by the Smith Kline & French Laboratories of Philadelphia.

Science News Letter, April 4, 1959

BIOLOGY

White Blood Cells Are Born Large, Grow Small

► WHITE BLOOD cells are born full-sized and grow smaller as they age, and finally disappear.

This was discovered by Drs. N. B. Everett of the University of Washington, J. M. Yoffey of The University, Bristol, England, and W. O. Reinhardt of the University of California, Berkeley.

The scientists traced the development of white blood cells in guinea pigs by injecting the animals with radioactive tracers.

They found that within 30 minutes after the injections radioactive white cells began appearing in the blood-manufacturing lymphatic tissues. The cells then quickly moved into the bloodstream to perform their normal function of keeping the blood clear of foreign matter.

About an hour after the injections, it was discovered the cells were dividing, and, unlike most other cells which divide and grow, they remained half-sized. The second generation white cells were found to divide into still smaller cells. There was no further reproduction and the smallest cells eventually disappeared in an unknown way.

The American Cancer Society reported the research which the U. S. Public Health Service supported.

Science News Letter, April 4, 1959

IE FIELDS

MEDICINE

Urge Indicating Drugs On Prescription Labels

► PHARMACISTS should put the names or ingredients of prescribed medicines on prescription labels when the doctor sees fit, the American Medical Association suggests.

In an editorial in its *Journal* (March 21) the AMA says, "it is suggested that with a somewhat larger section of the public than in former days the naming of drugs on prescription labels will work for good rather than for harm."

Reasons for listing the name of the drug on the label are that other doctors may be consulted by the patient, and even the original prescriber may be unable to recall or find a record of the precise medication he prescribed. Furthermore, identification of the drug may become urgent in emergencies involving accidental poisoning, overdosage, or attempted suicide. Learning the exact identity of the drug might be further delayed if the pharmacy were closed.

Such labeling would also aid the patient who might be out of town when obliged to consult an alternate physician for a refill of a prescription that could be determined only by contacting the office of the prescribing doctor or the dispensing pharmacy.

But the AMA carefully points out that there were cases where naming the medicine might be unwise. These cases might include patients with mental disturbances.

Science News Letter, April 4, 1959

MEDICINE

UCLA Specialists Propose New Syphilis Approach

► A NEW APPROACH to the serological diagnosis of syphilis has been proposed by a group of specialists at the University of California, Los Angeles, Medical School.

They are Drs. Charles M. Carpenter, Ruth A. Boak and James N. Miller who point to a national concern for the increasing venereal disease problem, complicated by false positive Wassermann tests.

The approach utilizes three procedures:

1. The standard serologic tests for syphilis (STS). If the STS are negative and there is no history or clinical evidence of syphilis, the patient is considered to be noninfected.

2. The Reiter Protein Complement Fixation test (RPCF), a new test employing a spirochete protein. It is carried out twice for accuracy on individuals who have a positive STS. If the RPCF test is also positive, treatment for syphilis should begin immediately if adequate treatment has not been previously administered.

3. The Treponema Pallidum Immobilization test (TPI), which utilizes living spirochetes obtained from experimentally infected rabbits and is the most specific and

sensitive test for syphilis. The TPI is used on patients with the positive STS and a negative RPCF.

A negative TPI test is accepted as proof that the patient does not have syphilis and confirms the falsity of the STS. But if it is positive, patients are diagnosed as having or having had the disease. Again treatment is dependent upon the patient's previous record of therapy.

The UCLA plan eliminates the second step now employed by most Public Health Laboratories—the Cardiolipin Kolmer test, which uses an extract of beef heart and is therefore no more specific than the other STS.

It also eliminates the need of the more expensive and technically difficult TPI test, available in only a few laboratories throughout the world, for those who are positive in the relatively simple and inexpensive RCPF test.

Science News Letter, April 4, 1959

MEDICINE

Achieve First Successful Treatment of Rare Disease

► A 31-YEAR-OLD woman wrinkled her brow. It was a historic moment. It meant that another formerly invincible disease was beginning to wilt under the attack of medical science.

The disease is called acrosclerosis. Not as widespread as cancer and heart diseases, it nevertheless is the source of wretched misery and pain to the unfortunate few afflicted.

Skin over the arms, chest, neck and face becomes red, leathery, hard and tight. The patient is unable to wrinkle his brow or smile, if he can find a reason to smile. Hands swell and grow stiff and ulcers develop on the fingertips and elbows. Some muscles are rigid. A kind of arthritis cripples the joints.

Dr. James Price, a clinical pathologist at the University of Wisconsin, working under an American Cancer Society lifetime grant, found a useful drug as a by-product of his metabolic studies.

The drug is called EDTA (ethylenediamine tetra-acetic acid). It is one of a group of chelating agents, compounds having the ability to wrench unwanted metals out of body chemicals.

In acrosclerosis, some metabolic disturbance induces large deposits of calcium and perhaps other metals in body tissues. These deposits cause all of the disease symptoms.

Dr. Price, together with dermatologists John G. Rukavina, Sture A. M. Johnson and Charles Mendelson and biochemist R. R. Brown, all of the University of Wisconsin, tried EDTA, which leaches calcium, on their first patient some 30 months ago. After a week and a half of treatment, the woman achieved her historic wrinkle. The only reminder of her disease today is a tenderness in her wrists.

Six patients have been treated to date, and all have been helped in varying degrees.

Science News Letter, April 4, 1959

MEDICINE

Test Detects Carriers Of Infant Disease

► VICTIMS of the often-fatal infants' disease galactosemia can now be helped, a team of researchers has reported.

A test has been developed for detecting carriers of the disease which is inherited. Galactosemia is seldom noted but this may be because it is difficult to diagnose and is often mistaken for other diseases, said Dr. Roger G. Hansen, head of the Michigan State University agricultural chemistry department.

Galactosemia is caused by a lack of the enzyme transferase. This enzyme is needed to change galactose, found in milk sugar, into glucose, a sugar the body can use.

Victims can be saved if the disease is diagnosed early and milk is taken from their diets.

Diarrhea, lack of appetite, loss of weight and jaundice are among the first signs that galactose is accumulating in the body. Enlargement of the liver, eye cataracts, mental retardation and death may follow.

By finding a way to measure the amount of transferase in an individual's blood, Dr. Hansen and Roger K. Bretthauer, a graduate student at MSU, have discovered that carriers of the disease have approximately one-half the transferase a normal person has. It is believed that carriers have recessive genes responsible for the condition.

Drs. George Donnell and W. R. Bergren, pediatricians at Children's Hospital, Los Angeles, cooperated in the study. Details of the report prepared by the four researchers appear in *Proceedings of the National Academy of Sciences*.

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ANTHROPOLOGY

Apple Corer May Be Oldest Human Tool

► THE HUMBLE and familiar apple corer may have had the lengthiest run of any device contrived by human intelligence, Dr. Raymond A. Dart of the University of Witwatersrand reports from Johannesburg, Union of South Africa. Such tools have been in use for some quarter of a million years.

Dr. Dart had dug up some scoop-like cannon bones (the lower leg bone of a hoofed animal) among the remains of the ancient man-apes, the Australopithecines. At first he was puzzled as to the possible use of these ancient tools. But a visitor showed him a very similar scoop made from the cannon bone of a sheep in Herefordshire, England, in 1890.

This device, the visitor said, was an apple corer made for elderly people who had lost their teeth so they could scoop out the core and then the meat of an apple for easy eating.

This kind of use for the feeding of flesh and pulp to babies and the aged gave the ancient instruments such a smooth surface that they look as if they had been oiled and polished, Dr. Dart reports in *Nature* (March 21).

Science News Letter, April 4, 1959

MEDICINE

Medicine Turns to Electronics

Medicine is getting some powerful assistance from electronics. Together they are bringing treatment and diagnosis to a level of proficiency otherwise unattainable.

By RALPH SEGMAN

► THE WORLD of medicine has become electrified.

Once dependent solely on their human senses and skills, physicians in growing numbers are turning to electronic devices for help in surgery, diagnosis and treatment.

One machine automatically brings back to life patients whose hearts stop beating. Another controls the critical anesthesia levels during surgery.

Devices currently in use make blood counts; record brain waves; detect cysts; radio information from the stomach; see chemicals at work in human cells; and substitute for heart, lung and kidney functions.

This is made possible by the electron, one of the fundamental building blocks of matter. The electron is so elusive, tiny and fast-moving—at top speed it could circle the earth more than seven times a second—that scientists are in the dark about much of its nature. Yet enough is known to have put it to work as a servant of man.

Some of the most everyday events depend on electric currents, the flow of great numbers of electrons. They light lamps, run machines, make telephone conversations possible, bring pictures to the television screen and start automobile motors. And now electronics has made its entry into the very marrow of human life and medicine.

Heart Pacemaker

One of the more dramatic of the electronic devices is the heart monitor and pacemaker, developed about two years ago by Dr. Paul M. Zoll of Beth Israel Hospital in Boston, Mass. Kept at the patient's bedside or in the operating room, it performs like a mechanical physician, ever alert for cardiac arrest.

The monitor and pacemaker may be linked to work automatically in the following way: A few seconds after the patient's heart stops beating, the monitor causes a nurse-summoning bell to jangle and automatically switches on the pacemaker. Through electrodes strapped to the patient's chest the pacemaker shoots 60 jolts of electricity a minute to get the heart beating normally again. Speed is essential here, since man normally can live only about four minutes after heart stoppage.

Dr. Zoll reckons there are hundreds of these machines now in operation and that hundreds of lives have been saved.

In surgical practice, anesthesia levels are maintained by a physician who constantly checks the patient's pulse, blood pressure, breathing rate, eye dilation and other outward signs. At the Mayo Clinic, Rochester,

Minn, an electronic machine is automatically adjusting anesthesia levels based on changes in brain waves.

While the surgeon is working on major human organs, there are machines to temporarily take over the functions of the organs. One by-passes blood around the heart. Electronic sensing and control devices maintain the critical blood temperature and pressure levels. Paralleling the artificial heart, there are the artificial lung and kidney, each by-passing the natural organ while it is being examined or repaired.

The use of electronics in diagnosis has advanced to the point where most physicians have access to one or more devices in their own office or in hospitals.

Late last year, the first long-distance diagnosis of its kind took place when a patient in the Naval Medical Center, Bethesda, Md., was examined by a group of physicians in Kansas City, Mo. Electronic devices strapped to the man's body recorded cardiac and respiratory information and immediately transmitted it nearly 1,000 miles to various "scopes" and recorders in Kansas City where specialists described the patient's condition. This system shows promise for cases in which advice of experts, who are not at hand, is needed.

Ultrasonic devices employing electronic principles detect cysts and growths which X-rays cannot locate because of their similarity to surrounding tissues.

Reduction of the danger of X-ray injury to the patient and the diagnosing physician has been found in electronic amplification, permitting a smaller X-ray dose.

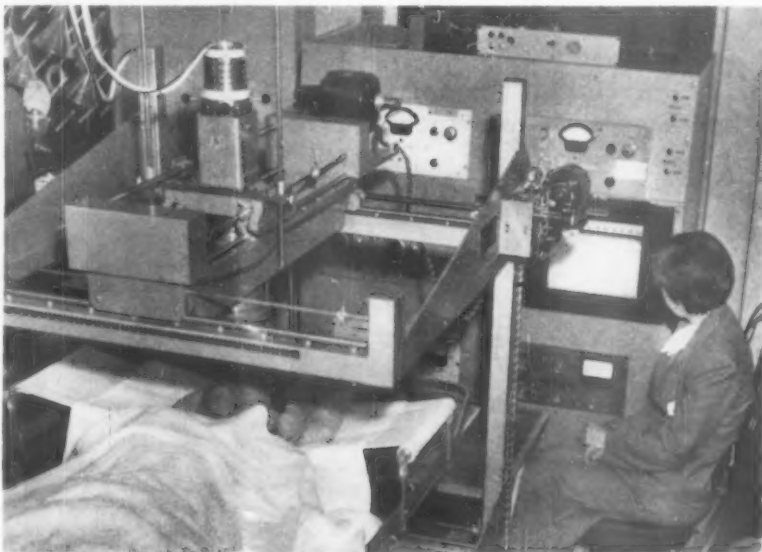
Another device, the brain tumor scanner, is used at the National Institute of Neurological Diseases and Blindness, a division of the National Institutes of Health, Bethesda, Md. Radioactive iodine-131 is injected into the patient. It concentrates in the tumor where it is detected by the scanner. The radiations activate electrons that are then detected by an electronic tube. The result is a pattern of dots locating and sizing the tumor.

Body Sounds Amplified

An electronic stethoscope picks up heart sounds, chest vibrations and sounds from other organs and amplifies them for a telephone headset or loud-speaker. It yields far more information than conventional stethoscopes.

One of the most ingenious diagnostic devices is the so-called radio pill, a tiny radio transmitter that can easily be swallowed. Its signal frequencies, sensitive to pressures in the stomach, give the receiver outside the body telltale information.

Blood pressure, spinal fluid pressure and brain waves can be measured electronically.



BRAIN TUMOR SCANNER—This patient has received an injection of radioactive iodine-131. If a tumor is present, the isotope concentrates in it and the electronic brain scanner detects the iodine's radiations. The result is a pattern of dots on the graph locating and sizing the growth. The photograph comes from the National Institute of Neurological Diseases and Blindness, Bethesda, Md.

A new instrument counts red and white blood cells and tumor cells 20 times faster than any trained technician. An automatic analyzer calculates and records glucose, nitrogen and phosphate levels in the blood; three such instruments with two part-time technicians can replace six full-time technicians.

Masses of information gathered by all these instruments are sometimes fed into electronic computers that present the diagnostician with processed material far more rapidly in some cases than human experts could.

Physician's Helpers

These and other extraordinary electronic devices are intended as aids, not replacements, for the physician. There is no doubt that the convergence of the relatively new science of electronics and the old art of medicine has been a fruitful one. And the relationship promises to become closer in the future.

Already, on the medical electronics horizon, new devices and ideas are appearing.

David Sarnoff, chairman of the board of the Radio Corporation of America, has said: "In theory, at least, it is conceivable that one day compact electronic substitutes will be provided on a permanent basis to replace organs that have become defective through injury or age.

"Artificial kidneys, lungs and even hearts may then become as familiar as artificial teeth or hearing aids. Indeed, one may imagine a man walking around in apparent good health with several of his organs replaced by the refined electronic substitutes of the future. Admittedly the idea is fantastic, but, as the marvels of electronics unfold, the line between fantasy and fact is ever harder to define."

Parts and Replacements

Electronic devices that automatically exercise any part of the body are already being used in the field of orthopedics for the correction and prevention of deformities.

Electronic methods are capable of amplifying feeble muscular efforts and impulses to almost any desired magnitude. The outlook—still only a hope—is for equipment which, attached to amputated limbs, will control movements of artificial arms, legs and fingers with acceptable precision.

Devices for helping the blind are in various stages of development. Some would scan books and newspapers and emit sound signals, enabling the sightless to read without the Braille system. Others would allow users to detect obstacles and changes in pavement levels.

And for the blind whose optical brain areas and optic nerves are undamaged there is hope for what might be considered one of the ultimates in medical achievement. It would be an electronic device that would gather visible light and transmit impulses to the optic nerves, which in turn would send impulses to the brain. Thus with the visual brain area stimulated, much as it is in normal sighted persons, the blind would actually see.

Science News Letter, April 4, 1959

YOUR SKIN AND ITS CARE

By H. T. Behrman, M.D., and O. L. Levin, M.D. Two dermatologists give you the up-to-date scientific facts. They tell you in detail exactly what to do to beautify and improve your skin, how to avoid or correct skin disorders, and how to deal with many skin problems as: Daily care of the face • allergies • cosmetics • pimples • blackheads • acne • whiteheads • cysts • boils • oily skin • dry skin • chapping • poison ivy • cold sores • hives • superfluous hair • ringworm • moles • birthmarks • scars • warts • tumors • skin cancer • excessive sweating • etc., etc. "Accurate, unvarnished story of practical skin care."—Connecticut State Medical Journal. Price \$3.00 Postfree • 5-day Money-Back-Guarantee EMERSON BOOKS, Inc., Dept. 653-L, 251 W. 19th Street, New York 11.

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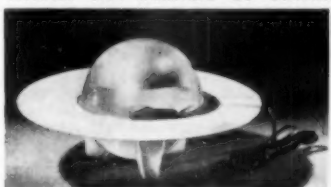
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YOUR OWN CHICK

• INTERESTING: The entire family will get a kick out of watching chick emerge from the shell.
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AIRCRAFT ELECTRICITY FOR THE MECHANIC—Charles Edward Chapel—*Aero Pubs.*, 2nd ed., 477 p., illus., \$5. Explains in simple language electrical fundamentals and their use in aircraft.

AMERICAN AUTOMOBILE MANUFACTURERS: The First Forty Years—John B. Rae—*Chilton Co.*, 223 p., illus., \$6. A historical study of success and failure in the automobile industry.

ATOMS FOR PEACE: U.S.A. 1958—John F. Hogerton, Ed.—*Arthur D. Little (Govt. Print. Off.)*, 165 p., illus., paper, \$4.50. Pictorial survey prepared for the U. S. Atomic Energy Commission.

BACTERIOPHAGES—Mark H. Adams and others—*Interscience*, 592 p., \$15. First comprehensive treatment of phage research in thirty years.

BETWEEN EARTH AND SPACE—Clyde Orr, Jr.—*Macmillan*, 253 p., illus., \$4.95. The story of the atmosphere, of weather and climate, vibration in the air, air pollution, and supersonic flight.

CAREERS IN THE ATOMIC ENERGY INDUSTRY—Harold L. Walker—*Bellman*, 32 p., illus., paper, \$1. Discusses the outlook, the challenge and the responsibilities of the industry, what training is needed, and where to get it.

DANGEROUS MARINE ANIMALS—Bruce W. Halstead—*Cornell Maritime*, 146 p., illus., \$4. Guide to marine animals that bite and are poisonous to man.

DECE CONTOS—Alexander Gode-von Aesch, selected per John Lansbury—*Storm Pubs.*, 26 p., paper, \$1.50. Durante le traduction in interlingua de grande massas de pesante materia technic, Dr. Gode ha trovato intervallos de tempore pro essayar iste nove idioma in un serie de delectabile schizos, le quales monstra a nos que interlingua pote esser capriciose, subtil, tenere, e poetic.

ECONOMICS OF AMERICAN FORESTRY—Albert C. Worrell—*Wiley*, 441 p., \$9.75. College course textbook.

ELECTRICAL ENGINEERING: Theory and Practice—William H. Erickson and Nelson H. Bryant—*Wiley*, 2nd ed., 613 p., illus., \$8. Considerable material on transistors added in this revision.

ENDOCRINES IN DEVELOPMENT—Ray L. Waterson, Ed.—*Univ. of Chicago Press*, 142 p., \$4. A Report from The Developmental Biology Conference Series, 1956.

EXPERIMENTAL PATHOGENIC MICROBIOLOGY—John M. Slack, James E. Dyson and William K. Harrell—*Burgess*, 146 p., illus., paper, \$3.65. Student manual of laboratory experiments.

FOOTE CANYON PUEBLO, EASTERN ARIZONA—John B. Rinaldo—*Chicago Nat. Hist Mus.*, 298 p., illus., paper, \$4. Final report on excavations of a late pueblo ruin in the Blue River Canyon.

FUNDAMENTALS OF NUCLEAR ENERGY AND POWER REACTORS—Henry Jacobowitz—*Rider*, 118 p., illus., paper, \$2.95. Short survey for the general reader of nuclear theory, reactors and atomic power.

FUNDAMENTALS OF RADIO TELEMETRY—Marvin Tepper—*Rider*, 116 p., illus., paper, \$2.95. General introduction to the field which makes possible for observers on the ground to know details of the course of missiles.

GROUP PROCESSES—Bertram Schaffner, Ed.—*Macy*, 266 p., \$4.50. Among other matters, discusses the impact of game-ingredients on children's play behavior and implications for our current models of personality.

GROUP PSYCHOANALYSIS—B. Bohdan Wassell—*Philosophical Lib.*, 306 p., \$3.75. Describes a psychoanalytic method, the treatment of personality disorders in a group setting.

HEALTH IN INDUSTRY—Donald Hunter—*Penguin*, 288 p., illus., paper, 95¢. Diseases and accidents to which workers in industry are liable, and how they may be treated or prevented.

HEREDITY COUNSELING—Helen G. Hammons, Ed.—*Hoehner-Harper*, 112 p., \$4. A symposium sponsored by the American Eugenics Society.

THE IMPACT OF CONTEMPORARY SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENTS UPON THE AMERICAN ECONOMY—Harold Taylor and others, preface by M. L. Frankel—*U. S. Council on Economic Educ.*, 156 p., paper, \$2. Proceedings of the Science-Economics Workshop, held at Sarah Lawrence College in 1958.

THE INTERNATIONAL GEOPHYSICAL YEAR AND SPACE RESEARCH: Staff Report—Select Comm. on Astronautics and Space Exploration—*Govt. Print. Off.*, 36 p., paper, 30¢. Summary report on the results of the IGY in the space sciences.

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RESEARCH HIGHLIGHTS OF THE NATIONAL BUREAU OF STANDARDS: Annual Report, Fiscal Year 1958—A. V. Astin, Dir.—*Nat. Bureau of Standards (Govt. Print. Off.)*, 138 p., illus., paper, 45¢.

RESEARCH IN SPACE SCIENCE: Special Report No. 21—Charles A. Whitney and others—*Smithsonian Astrophysical Observatory*, 37 p., paper, single copies free upon request direct to publisher, Cambridge 38, Mass. On the structure of the high atmosphere and Moonwatch catalogue.

ROCK GARDEN PLANTS: New Ways to Use Them Around Your Home—Doretta Klaber—*Holt*, 173 p., illus., by author, \$3.95. An introduction to alpine plants we can grow in our gardens.

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SPACE HANDBOOK: Astronautics and Its Applications—Rand Corporation, Robert W. Buchheim, Dir.—*Select Comm. on Astronautics and Space Exploration (Govt. Print. Off.)*, 252 p., illus., paper, 60¢. Authoritative study in lay terms.

STORM DATA, Vol. I, No. 1: January 1959—Weather Bureau, F. W. Reichelberger, Chief—*Govt. Print. Off.*, 8 p., paper, 15¢, annual subscription \$1.50. Reports storm data and unusual weather phenomena on a state and county basis.

3 WATER BALANCE MAPS OF EASTERN NORTH AMERICA—C. W. Thornthwaite, John R. Mather and Douglas B. Carter, foreword by Edward A. Ackerman—*Resources for the Future*, 47 p., 3 maps, paper, \$2.

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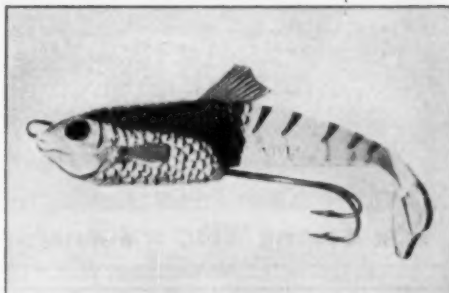
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✿ **PAINT ROLLER KIT** permits using one roller for all types of paint and all surfaces. The roller has a cover of resilient plastic foam 7" wide and 1 1/4" in diameter that is easily cleaned. Cover refills are so inexpensive they may be thrown away after one using.

Science News Letter, April 4, 1959

✿ **PROJECTION LAMP** for slide and movie projectors has a reflector sealed right in the bulb, behind the tungsten filament. The reflector gives the bulb 20% more screen brightness than ordinary lamps. It also reflects heat away from the rear of the bulb wall, resulting in cooler lamp operation and increased filament efficiency.

Science News Letter, April 4, 1959

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✿ **CATALYTIC BURNER** for use outdoors is a combination stove, vertical broiler and radiant heater. Fueled by a small dis-



posable propane gas cylinder, the portable burner, shown in the photograph, provides a cooking effect comparable to that attained with charcoal or with resistant-wire type electric broilers. It is about the size of a large lunch pail and weighs nine pounds with fuel.

Science News Letter, April 4, 1959

✿ **BRICK HAMMER** of steel has a plastic plug at the end of the handle butt for tapping bricks. The triple-alloy steel handle is

heat-treated and chrome-plated, and is permanently locked in the head. A rubberlike plastic grip is contoured and perforated for easy handling and absorbs shock.

Science News Letter, April 4, 1959

✿ **MERCURY-THALLIUM THERMOMETERS** for use in low temperatures give reproducible readings under all climatic conditions. They come in ranges of minus 57 to plus 100 degrees centigrade and in lengths of 9 to 18 1/4 inches.

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✿ **HOME AIR PURIFIER** uses adsorptive charcoal to remove dust, pollen, smog, odors and other impurities and irritants from the air. The charcoal filter has many microscopic chambers that trap particles when air passes through. Using less electricity than a 17-watt bulb, the unit filters 110 cubic feet of air per minute.

Science News Letter, April 4, 1959



Nature Ramblings



By HORACE LOFTIN

➤ EXCEPTING the evergreens, which can dare the icy blasts, the majority of our woodland trees have stood naked against the winter sky for the last several months. But now a warm glow of bright green is lighting up the forests as the winter buds break their dormancy to send forth the first tender leaves.

Along with, or even before, the emergence of the spring foliage, many of the trees come forth in blossoms.

These tree flowers may be as bright and showy as those of the dogwood or the redbud, with their color shining through the spring woods. Most of the tree flowers, however, are tiny and seldom seen by the casual observer. Even if these structures are noted, their identity as flowers may not be realized at first.

These smaller flowers of trees generally depend upon the wind for distribution of the pollen. So much pollen may be produced

The Forest's Hidden Flowers



and spread by the March winds that the forest floor is covered in a golden coat.

With wind pollination, the large petals, bright colors and other adaptations of "typical" flowers for attracting insects become unnecessary. As a matter of fact, these insect attracting parts might even interfere with the spread of pollen by the wind. Thus, it is not surprising to find the small size and lack of common flower parts in these tiny tree blossoms.

Taking a long look backward into the early history of the flowering plants, it has been shown that the typical large, bright blossoms of insect-pollinated plants probably evolved from the simpler wind-pollinated structures.

The best way to take a good look at these tree flowers is with a hand lens. A simple reading glass will do. This close look will reveal the presence, absence or modification of typical floral parts. It will also disclose hidden beauty, for many of these wee blossoms are as striking in their own right as are the flowers of your garden.

Among the things you may discover in your "closer look" is that the different species of trees exhibit sexual differences. You may find that one species has all male flowers on one tree and female on another. Other species may bear separate male and female flowers on the same tree, while others have both sexes in the same blossom.

Science News Letter, April 4, 1959

